

REMARKS

The Applicants submit the current Amendment in conjunction with a Request for Continued Examination of the present application filed concurrently with this Amendment. By this Amendment, certain claims have been amended as set forth above to overcome the Examiner's rejections as stated in the final Office Action. Claims 1-13 remain in the application. The Examiner's allowance of all pending claims is earnestly solicited.

Claim 14 has been indicated as withdrawn based on a constructive election under the provisions of 37 C.F.R. 1.145. However, the Applicants suggest that the invention of claim 14 newly-presented in the Amendment of November 22, is not independent and distinct from the inventions presented in claims 1-13 as originally filed. In particular, it is not seen how the inventions set forth in the apparatus claims 1-13 are independent from the invention set forth in the process claim 14. Independence suggests the lack of any relation or commonality, but both claim groups relate to deposition of material on a wafer using the inventive pedestal cover. The claim groups are not independent and therefore the requirement for restriction is respectfully traversed. Applicants acknowledge withdrawal of the claim from current consideration by the Examiner.

Within the first claim set, claims 1 and 2 stand rejected under Section 103(a) as unpatentable over Xu (5,841,624) in view of Frankel (6,106,630) and Patadia (6,146,504). Claim 3 has been rejected as unpatentable over Xu, Frankel, Patadia and the applicant's admitted prior art.

To further distinguish the invention over the cited art, the Applicants have amended the second paragraph of claim 1 to "a removable pedestal cover overlying the planar upper surface of the chuck and extending laterally beyond the sidewalls, the pedestal cover defining a peripheral circumferential groove in an upper surface thereof and a concave lower surface for receiving the planar upper surface of the chuck therein, wherein a circumference of the wafer extends radially inwardly of an inner sidewall of the groove." Support for the amendments can be found in Figures 8 and 9 and the accompanying text in paragraphs [0040] - [0042].

Xu discloses that "the key feature of the invention is that the wafer [120] is supported in a spaced-apart relation to the surface of the chuck [110] by conductive pads [102] within the cover layer [100]." See Xu's Figure 1, where the spaced-apart distance between the lower surface of the wafer and the upper surface of the chuck is identified by a reference character 124. This distance

should be larger than the expected diameter of contaminant particles that may lie on the surface of the cover layer. The contaminant particles thus do not adhere to the underside of the wafer during processing. See column 2, lines 25-29. Further, “the underside [122] of the wafer 120 contacts the top surface 106 of each conductive pad 102 and a portion of insulating material 108 proximate each conductive pad 102.”

Frankel discloses a protective layer 500 (see Figure 8A) overlying the pedestal to avoid electrostatic attraction of the wafer to the pedestal. See column 3 at lines 12-16 and column 11 at line 30. As stated at column 2, lines 43 and 44, “the pedestal includes a protective layer substantially covering and adhered to the wafer support surface.”

Patadia’s substrate support is designed to reduce “material deposition on and/or scratching of the backside of the substrate” that can cause “adhesion of the substrate to the support member.”

The Applicants have carefully considered the Examiner’s comments related to the combinability of the cited references and offer the following comments in response. As the Applicants understand the *prima facie* test for obviousness, it includes a showing that the reference combination or modification appear to show or suggest the claimed invention.

The Examiner suggests that since Xu and Frankel both relate to protecting a chuck they are combinable according to the accepted principles of combining references. But the analysis of the propriety of the combination does not end with the recognition that both relate to chuck covers. Frankel’s cover 500 in his Figure 8A is in contact with the upper surface 501 of the pedestal 12. Xu at column 2 lines 20 and 21 states that, “The cover layer maintains a wafer, or other workpiece, in a spaced-apart relation to the support surface of the chuck.” Xu then continues, explaining the importance of the distance between the underside of the wafer and the support surface and that this distance should be larger than the expected diameter of contaminant particles. See also Xu column 4 beginning at line 4, i.e., Xu’s cover layer 100 maintains the wafer 120 in a spaced-apart relation to the surface of the substrate support 112. Xu teaches away from the Frankel reference because the Frankel cover is in contact with the chuck and thus does not allow for the spaced-apart relation sought by Xu. Also, the Xu cover layer is intended to space the wafer apart from the chuck, but Frankel’s cover layer protects the chuck from etching and deposition. There can be no motivation to combine when the two references

disclose opposing and contradicting limitations and objectives directly related to the common element that purportedly permit the combination.

The combination of Frankel and Patadia is also suspect. Frankel discloses a chuck cover that adheres to the chuck for protecting the chuck. Patadia discloses a chuck or wafer support structure having a deposition collection channel for protecting the wafer during deposition. One would not be motivated to use the collection channel of Patadia in the Frankel cover, or vice versa, if Frankel's objective is to protect the chuck and Patadia's objective is to protect the wafer.

Assuming for the purposes of Applicants' further rebuttal that the three references are combinable, the combination does not disclose the Applicant's invention as set forth in amended claim 1, e. g, there is no disclosure or suggestion of a removable pedestal cover among the three references. Neither the Xu nor Frankel references disclose that their respective pedestal covers are removable. In fact, Frankel states explicitly that his protective layer is "adhered to the wafer support structure." Patadia does not disclose a cover; instead his invention focuses on the wafer support member, i.e., the chuck. Further, the references do not disclose the Applicant's invention as set forth in amended claim 1.

It has also not been demonstrated that it would be obvious to one skilled in the art at the time the invention was made to modify the combination of the cited references to show or suggest the claimed invention, especially since the art does not disclose a removable cover with a peripheral groove therein. One what basis is it believed to be obvious to modify the cited art to reach the Applicants invention? That is, why would it be obvious to include collection channels at a distance from chuck sidewalls in a Frankel cover that adheres to the sidewalls and protects the sidewalls by covering them?

It is further noted that claim 1 now claims, "a removable pedestal cover overlying the planar upper surface of the chuck and extending laterally beyond the sidewalls, the pedestal cover defining a peripheral circumferential groove in an upper surface thereof and a concave lower surface for receiving the planar upper surface of the chuck therein, wherein a circumference of the wafer extends radially inwardly of an inner sidewall of the groove."

These amendments should be sufficient to patentably define the invention over the art of record. As can be seen from Patadia's Figure 9, the circumference of the wafer overlies the channel 116 in Patadia's disclosure, in contrast to the Applicants' limitation in claim 1, i.e., wherein a circumference of the wafer extends radially inwardly of an inner sidewall of the groove.

This feature of the Applicant's invention obviates build-up of the deposited material on the pedestal cover to the point where it can overlap the wafer as illustrated in the Applicants' Figure 7. It is further observed that Patadia's invention attempts to permit "coverage of the full surface of a receiving face in a substrate while at the same time reducing material deposition on the edge of the substrate." Applicants' objective is to reduce material build-up on the peripheral edge of the prior art pedestal cover, as described in paragraph [0039] and illustrated in Figure 7. Recall that in one embodiment the Applicants disclose that a clamp is not necessary for exerting a downward force on the wafer to restrain it against the chuck. Avoiding use of the clamp permits the fabrication of components proximate the wafer periphery as described in Applicants' paragraph [0031].

The references cited by the Examiner do not suggest or disclose at least these limitations of the Applicants' invention. Thus it is respectfully suggested that the Applicants' amended claim 1 is patentably distinct therefrom.

Each of the dependent claims 2 and 3 depending from claim 1 further distinguish the invention over the art of record and therefore are deemed to be in condition for allowance.

Independent claim 4 and dependent claim 5 stand rejected under Section 103(a) as unpatentable over Xu in view of Frankel.

To further distinguish the invention over the cited art, the Applicants have amended the second paragraph of claim 4 as set forth above. The combination of Xu and Frankel is not permitted as described above nor does the combination disclose a "removable" pedestal cover as both the Xu and Frankel covers are formed on the pedestal by subjecting the pedestal to certain deposition and/or sputtering steps.

Dependent claim 5 further distinguishes the invention over the art of record and therefore are deemed to be in condition for allowance.

Independent claim 6 and dependent claims 7 and 9 stand rejected under Section 103(a) as unpatentable over Xu in view of Frankel and Patadia. Dependent claim 8 stands rejected under Section 103(a) as unpatentable over Xu in view of Frankel and Patadia and further in view of Burkhart (5,656,093).

The remarks set forth above regarding claim 1 also apply to the rejection of claim 6. None of the references disclose or suggest to one of ordinary skill in the art "a removable disk defining a peripheral circumferential trench therein and downwardly directed sidewalls extending

from a bottom surface thereof the sidewalls further defining an opening and wherein the wafer is positioned in contact with the disk and the disk is supported by the chuck during the material deposition process, wherein a circumference of the wafer extends radially inwardly of an inner sidewall of the trench,” as set forth in amended claim 6.

Thus the Applicants suggest that independent amended claim 6 and dependent claims 7-9, which further distinguish the invention over the art of record, are allowable.

Independent claim 10 and dependent claims 11 and 13 stand rejected under Section 103(a) as unpatentable over Xu in view of Frankel. Dependent claim 12 stands rejected under Section 103(a) as unpatentable over Xu in view of Frankel and Patadia and further in view of Burkhart.

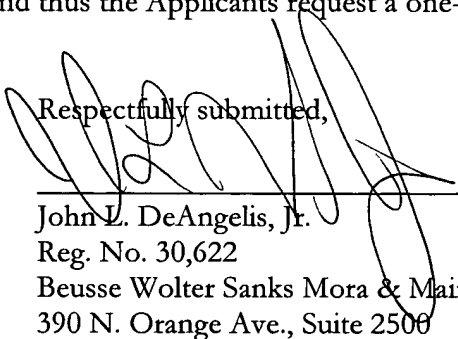
To further distinguish the invention over the cited art, the Applicants have amended the second paragraph of claim 10 as set forth above. The combination of Xu and Frankel is not permitted as described above nor does the combination disclose a “removable” disk as both the Xu and Frankel covers are formed to adhere to the pedestal by subjecting the pedestal to certain deposition and/or sputtering steps.

Thus the Applicants suggest that independent amended claim 10 and dependent claims 11-13, which further distinguish the invention over the art of record, are allowable.

Since the proposed claim amendments overcome the current claim rejections, entry of the amendments and issuance of a Notice of Allowance for all pending claims is respectfully requested. If a telephone conference will assist in clarifying or expediting this Amendment, the Examiner is invited to contact the undersigned at the telephone number below.

Applicants hereby Petition for an extension of time of one month from the shortened statutory period set forth in the Amendment mailed on February 10, 2006. That shortened statutory period expires on May 10, 2006, and thus the Applicants request a one-month extension to June 10, 2006.

Respectfully submitted,



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CERTIFICATE OF MAILING

I HEREBY CERTIFY that the foregoing RCE Amendment is being deposited with the U.S. Postal Service as First Class mail on the 2 day of June, 2006, and is addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Pamela A. Pagel